I Claim:

1. A photocatalytic reactor for the destruction of organic air-borne pollutants, the photoreactor comprising;

- means for admission of a gas stream carrying air-borne volatile organic pollutants into a closed tubing system;

- means for constraining and increasing the velocity of the gas stream while simultaneously creating a suction effect; and

- means for irradiating the air-borne volatile organic pollutants within the gas stream.

2. The photoreactor of claim 1, wherein said irradiating means is located downstream of said constraining and velocity means.

3. The photoreactor of claim 1 ~~or 2,~~ wherein said irradiating means is transversely positioned with respect to the gas stream.

4. The photoreactor of ~~any one of claims 1 to 3,~~ Claim 1 wherein said irradiating means comprises a catalyst imbedded within a supported transparent fibrous mesh.

5. The photoreactor of claim 4, wherein said catalyst is TiO_2.

6. The photoreactor of claim ~~4 or 5,~~ wherein said fibrous mesh is supported by a perforated plate having adequately sized holes to provide for a drop in air pressure and adequate air flow through said plate.

7. The photoreactor of claim 6, wherein said perforated plate is heated to desorb any absorbed water.

8. The photoreactor of claim 5, wherein said transparent fibrous mesh is homogeneously loaded with up to about 50% TiO_2/g of fibrous mesh.

9. The photoreactor of claim 7, wherein said perforated plate is made of a non-corrosive, non-oxidizing material.

10. The photoreactor of claim 2, wherein a Venturi section is provided for for constraining and increasing the velocity of the gas stream while simultaneously creating a suction effect.

11. The photoreactor of claim 10, wherein said vacuum promotes self cleaning of said Venturi section by the removal of dust and dirt from the air stream and preventing dust and dirt to accumulate within said Venturi section.

12. The photoreactor of claim 10 ~~or 11~~, wherein said Venturi section comprises an elongate pipe having a convergent section, a straight section and a divergent section.

13. The photoreactor of ~~any one of claims 10 to 12~~ claim 1, wherein said Venturi section is made of a non-corrosive material.

14. The photoreactor of claim 12, wherein said divergent section has a UV light illuminating means and a reflective means to direct reflected UV light onto the irradiating means.

15. The photoreactor of claim 14, wherein said UV light illuminating means comprises UV lamps positioned adjacent windows and said reflective means comprises mirrors adjacent said windows.

16. The photoreactor of claim 15, wherein said UV lamps are selected from the group consisting of low pressure mercury lamps, medium pressure mercury lamps and advanced medium pressure lamps.

17. The photoreactor of claim 15, wherein said windows are made of a material selected from the group consisting of plexiglass, quartz glass, pyrex glass and stove glass.

18. The photoreactor of claim 15, wherein said UV lamps are supported by reflectors to direct and reflect the UV light towards the irradiating means.

19. The reactor as claimed in claim 1, wherein said reactor additionally comprises an outlet means downstream of said irradiating means for releasing the treated gas stream.

20. The reactor as claimed in claim 1, wherein said reactor additionally comprises a fan means located upstream of said irradiating means to circulate the gas stream towards the irradiating means.

21. A photocatalytic reactor for the destruction of organic air-borne pollutants, the photoreactor comprising;

-a system for containing and enclosing a gas stream;

- inlet means for admission of said gas stream within said system;

- a Venturi section for constraining and increasing the velocity of the gas stream while simultaneously creating a suction effect;

- an irradiating means located downstream of said Venturi section for degradation of air-borne organic pollutants within the gas stream; and

- an outlet means located downstream of said irradiating means to release the treated air stream from said reactor.

22. A method for the destruction of organic air-borne pollutants, said method comprising the steps of:

- circulating a gas stream having volatile organic pollutants therein through a photocatalytic reactor;

- constraining and increasing the velocity of the gas stream while simultaneously creating a suction effect; and

- directing said gas stream through an irradiating means for degradation of the pollutants.

23. The method of claim 22, wherein said gas stream is circulated through a Venturi section which constrains and increases the velocity of the gas stream while simultaneously creating a suction.

24. The method of claim 23, wherein said vacuum promotes self cleaning of said Venturi section by the removal of dust and dirt from the air stream and preventing dust and dirt to accumulate within said Venturi section.

25. The method of claim 21, ~~or 22,~~ wherein said irradiating means is transversely positioned with respect to the gas stream.